

Workstream:

Information Technology

# **TMT IT Workstream Assessment Recommendations**

## **1. Priorities / Governance**

- a. Establish Business Driven Governance (Steering) Committee
- b. Creation of a Staff position to manage the governance process for the Steering Committee
- c. Move technology budgets into an enterprise technology budget structure (managed by Governance Committee)

## **2. Systems & Data Integration**

- a. Initiate a Data integration project to consolidate Management Data
- b. Monitor the implementation of the Technical Infrastructure being implemented as part of the SAP upgrade

## **3. Communication**

- a. Identification of communication resource(s)
- b. Implementation of Strategic Communication Plan

## **4. Procurement**

- a. Establish an IT “Standards” group to develop technology standards for the Department
- b. Catalog these standards & enable business units to utilize SAP to acquire hardware and software

## **5. Accountability**

- a. Require customer service training for “Customer Facing” IT employees
- b. Ensure that SPIRIT Program is implemented and benefits are being received
- c. Ensure adequate oversight of the implementation of metrics for IT staff
- d. Ensure that approved projects (Governance Committee) receive priority

## **6. (IT) Training Services**

- a. Complete restructuring of IT Training Resources (Includes business, engineering and desktop training services)

## **7. Desktop Support**

- a. Finalize and sign a **Memo of Understanding with STATE ITS** confirming their scheduled implementation of the new email and calendar systems
- b. Identify a **position** that will be responsible for ensuring that our calendar, email, operating system, and productivity software & services are operationally sound and adequately maintained in the future.

## **8. Technical Infrastructure**

- a. Implement Wireless Network Pilot in Board Room and Chief Engineers Conf Room
- b. Implement VPN solutions (Note: provides the ability to work on state network remotely)

## **9. Organization Restructuring**

- a. Assign communications responsibilities
- b. Improve information technology security workflow / approval processes
- c. Consolidate Training functions
- d. Restructure “Technical Infrastructure” resources
- e. Restructure Project Management Office to become more effective and visible to the business

## **10. IT Career Banding & Employee Development**

- a. Implement approved salary adjustments to move NCDOT IT positions to current OSP minimum levels (approved Nov 2007)

## **11. Other Considerations**

- a. SB 991 modifications that would eliminate the need for 20,000 sq. ft. warehouse & support staff
- b. Move Road Inventory & Mapping Sections back into the business
- c. Evaluate ITS / OSBM recommendation to consolidate NCDOT technology infrastructure with ITS. Ensure that the consolidation is mutually beneficial to the State and NCDOT.

# **NCDOT Transformation Management Team Information Technology Assessment**

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**Revised April 8, 2008**

# IT Assessment Background

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- McKinsey diagnostic
- Informal TMT Outreach
- Executive Committee Meetings
- Personal Experiences

# IT Assessment Background

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Using old / outdated software, programs, equipment. (Email, Office, Calendar, etc.)

I am fairly sure that 95% of DOT employees have no idea what the goal and objectives are and what the business drivers are of the individual departments are to accomplish the mission of NCDOT.

(IT) doesn't work with customer to solve problems and find alternatives. They just say this is what we've done, this is what we have so take it or leave it.

IT can unilaterally make technology decisions that are contrary to the desire of the business process owner

'First and foremost communication, or lack of, is the major impediment in getting things done. ... Organizational initiatives are not relayed on nor periodically reviewed.

Upgrades/request to our systems / programs take entirely too long to complete and are not priorities...

# IT Assessment Team

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- Information Technology Assessment Team
  - Mark Tyler – DOH Operations Accountant
  - Jan Bryant - Director of Special Projects
  - Frank Winn – Director of Engineering Transportation Systems
  - Mike Pettyjohn – Division Engineer – North Wilkesboro
  - Victor Barbour – State Project Services Engineer

# Structuring Our Review

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- Mission & Goals
- Priorities / Governance
- Systems & Data Integration
- Communication
- Procurement
- Accountability
- Training
- Desktop Support
- Security
- IT Organization
- IT Career banding & employee development

# Mission & Goals

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- Findings
  - Meetings were held with IT Managers to map their functions to the new NCDOT Mission and Goals. Value trees were developed to clearly align functions and goals.
- Recommendations
  - Communicate the NCDOT Mission and Goals to **ALL** IT employees
  - Communicate how IT aligns with NCDOT Mission and Goals
  - Post the Value Tree on the IT portal
  - Require IT managers to include Mission, Goals and Value Trees in the new hire orientation process



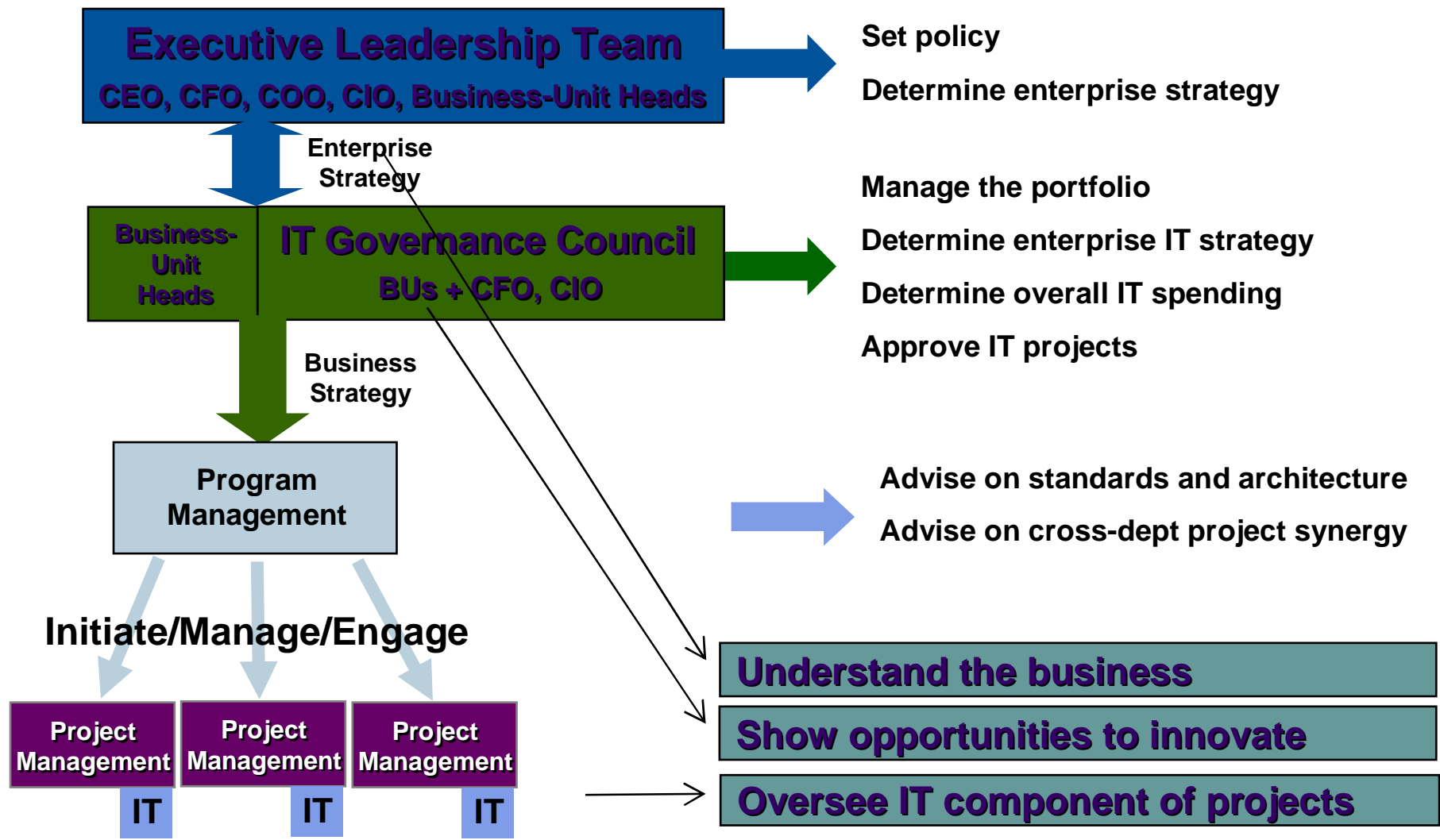
# Priorities / Governance

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- Findings
  - Within IT, lack of awareness of the technology needs of the business
  - Within the business, lack of awareness of the technology challenges being managed
  - Ad hoc (non-strategic) process for managing technology project priorities
    - ◊ Deployment of strategic technology / applications is affected
- Recommendations –
  - Align significant technology decisions with business strategy
  - Establish Business Driven Governance (Steering) Committee
  - Near term review of strategic technology solutions

# Priorities / Governance - Getting IT Governance Right

Source: Gartner

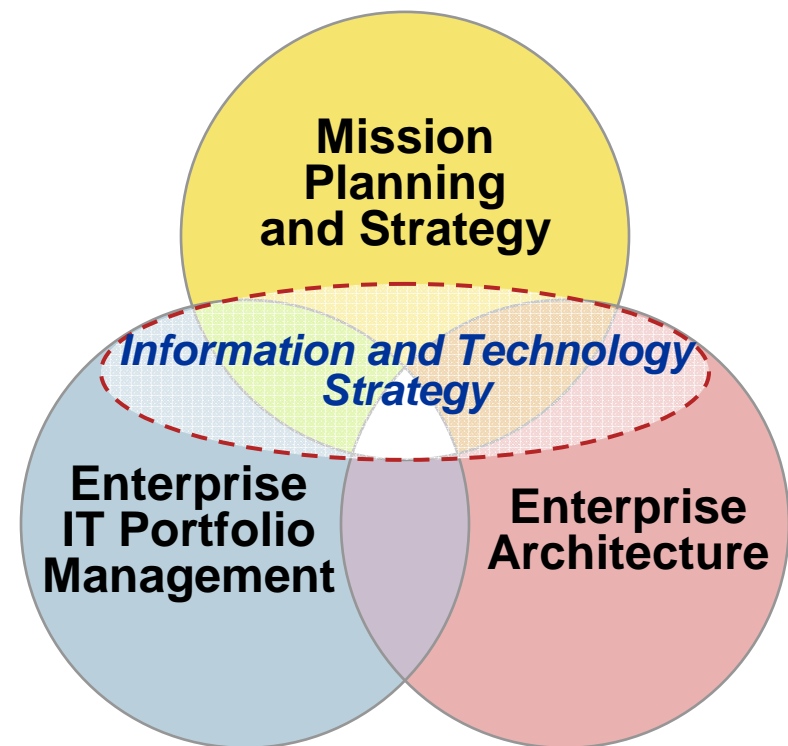


# Priorities / Governance – IT Strategic Plan

Source: Gartner

- **Mission-Specific Policy by Itself**
  - Vision and goals, but needs capacity and capabilities to make it happen
- **IT Strategy by Itself**
  - Nice plans, but no direct link to business case for projects or understanding of future-state requirements
- **Enterprise Architecture by Itself**
  - Standards without the ability to change behaviors
- **Project/Portfolio Planning Only**
  - Short-term view, no view on long-term needs/direction
- **Otherwise, status quo remains:**
  - Silos of activities
  - Increased costs
  - Duplicate systems and processes
  - Inflexible to change

## Three Enterprise-Level Disciplines Should Come Together



Should See Integration Across Processes, Governance and Value Assessments

# Priorities / Governance- Governance Committee

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- **Creation of Senior Level Information Technology Governance Committee**
  - Develop an IT Strategic Plan
  - Establish strategic goals for management systems at NCDOT (Portfolio).
    - Evaluate effect of SB991 on Dept. Operations
  - Review, prioritize, and approve major projects
  - Approve membership of Functional Committees for major projects.
  - Receive project status reports for ongoing / upcoming major projects.
- **Creation of a Staff position to manage the governance process for the Steering Committee**

**Senior  
Staff**



# **Priorities / Governance- Significant Technology Needs**

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## Significant Technology Needs Identified

- **Data Integration Project**
- **Enterprise Document Management Solutions**
- **Project Collaboration Software**

## **Priorities / Governance- Data Integration Project**

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- Findings
  - NCDOT lacks integrated management data across core business applications (GIS, MMS, PMS, BMS, SAP, HICAMS, SPECS, TIMS, CARS)
- Goals -
  - Integrate data across DOT to enable management reporting
  - Ensure consistent and accurate reporting across business areas
  - Provide reporting from a single source

# Priorities / Governance- Data Integration Project

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## Recommendations – Data Integration Project

- **SAP Business Intelligence (BI / BW)** to be used as single source for all DOT management reporting
- **Form steering committee of key business and IT owners**
  - ◇ Identify applications, systems and data sources across DOT
  - ◇ Identify business owner for each application
  - ◇ Identify IT manager for each application
  - ◇ Identify system of record for key master data across DOT
- **BI team to work with business units** to develop reporting requirements under direction of the steering committee
- Design, develop and implement business unit reports
- Take recommendation to the governance council

# **Priorities / Governance- Enterprise Doc. Mgmt. Solution**

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## Findings –

- Project Let Documentation (Plans, Revisions, Contracts, etc.)
- NCDOT Policy Management
- Web content management

## Goal –

- Better manage documents that need to be shared internally between business units and externally with stakeholders and customers

## Recommendation –

- Identify small group that can adequately document the document management needs throughout the Department.



# **Priorities / Governance - Project Collaboration Software**

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## **Findings –**

- **Transportation Decision Support System** – Need for project collaboration tool to support transportation planning, programming, and project development core processes.

## **Goal –**

- Experience significant gains in efficiency and effectiveness through information collection, sharing and collaborative processes needed to move transportation projects and support permitting activities..

## **Recommendation -**

- Governance committee review existing business case documentation put together by OEQ, PDEA, TPB and TMT

# Systems & Data Integration

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- Findings

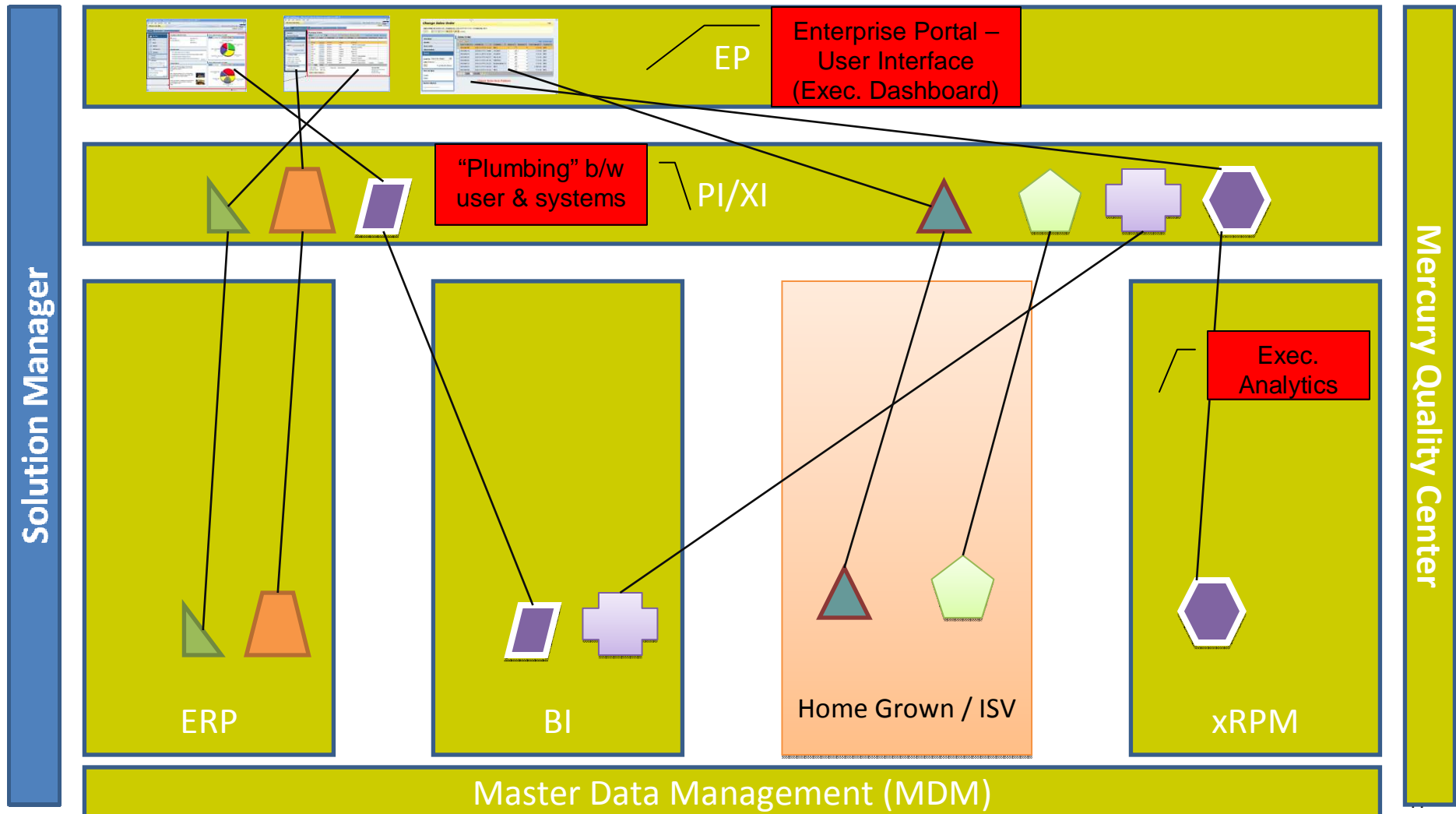
- NCDOT IT is in the process of implementing infrastructure solutions to meet the growing IT demands for technology and data

- Recommendations

- Monitor the implementation of the Technical Infrastructure being implemented as part of the SAP upgrade
- Restructuring of infrastructure resources given new strategic infrastructure direction (SAP Infrastructure resources should be incorporated into the new IT infrastructure organization structure)

# Systems & Data Integration - Foundation for the Future

**Consistent Master Data – Better Reporting – Greater Interoperability**  
**Consistent User Interface – Faster Delivery – Improved Quality**



# Communication

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- Findings
  - Failure to communicate IT standards, rules and processes to the Business
  - Limited opportunity to communicate the business needs to the IT staff
- Recommendations
  - Identification of Full time Communication Resource
  - Implementation of Strategic Communication Plan
    - ◇ McKinsey communication plan being utilized by TMT
    - ◇ Encourage IT managers to become more active in business meetings / conferences to raise awareness of both the business needs and technical capabilities

# Communication – Plan Outline

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<b>SECTION ONE – AUDIENCES.....</b>	<b>5</b>
<b>SECTION TWO – SCHEDULE OF EVENTS (INTERNAL AUDIENCES).....</b>	<b>6</b>
NCDOT EMPLOYEES .....	6
SECRETARY’S OFFICE.....	8
<b>SECTION THREE – SCHEDULE OF EVENTS (EXTERNAL AUDIENCES).....</b>	<b>10</b>
OTHER STATE AGENCIES .....	10
<b>SECTION FOUR – COMMUNICATIONS CALENDAR.....</b>	<b>12</b>
<b>SECTION FIVE – COMMUNICATION FORMATS.....</b>	<b>13</b>
DISTRIBUTION A.....	13
IN THE LOOP .....	13
MANAGEMENT TEAM MEETINGS.....	13
PORTAL PAGE.....	13
STATUS REPORTS .....	13
TRAINING .....	13
<b>SECTION SIX – COMMUNICATION PRINCIPLES .....</b>	<b>14</b>
<b>SECTION SEVEN - COMMUNICATION ELEMENTS.....</b>	<b>15</b>
AUDIENCE GROUPS .....	15
TIMING OF COMMUNICATION EVENTS .....	15
COMMUNICATION AND FEEDBACK CHANNELS .....	15
COMMUNICATORS .....	16
FEEDBACK AND MEASURING EFFECTIVENESS .....	16

# Procurement

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- Findings
  - Ability to procure/acquire IT hardware and software is very cumbersome and sometimes subjective
    - ◇ Utilizing a paper form for requesting hardware and software
  - NCDOT has recurring funding for the replacement of computer hardware
- Recommendations
  - Establish an IT “Standards” group that is responsible for
    - ◇ Testing and recommending next generation technology solutions (hardware and software)
    - ◇ Developing & maintaining a “standard” technology catalog
  - Utilize SAP for Technology requests
    - ◇ Update SAP Material Master with approved technology catalog items
    - ◇ Utilize standard procurement process for requesting IT catalog items
  - Transition the management and distribution of technology hardware to the Equipment and Inventory Control Unit
  - Move the appropriate technology budgets into the Governance Office cost center for the governance committee to manage

# Accountability

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- Findings
  - There is a consistent feeling among NCDOT IT customers that there is a lack of accountability regarding IT performance.
  - Senior IT staff was aware of this concern and is working toward changing the culture of the IT staff. (State ITS model)
- Recommendations
  - Require customer service training for “Customer Facing” IT employees
  - Ensure that SPIRIT Program issues are reviewed and resolved. Pending approval, Senior IT management should ensure that the program is implemented and benefits are being received
  - Ensure adequate oversight of the implementation of metrics
  - Require the utilization of SAP as the core IT project management tool (Project Delivery, and Resource Capacity Evaluation)
  - Ensure that approved projects (Governance Committee) receive priority

- Findings
  - Findings
    - ◇ Lack of business knowledge among some trainers
    - ◇ Lack of distance learning tools (online self study, web conferences, etc.)
    - ◇ Outdated training materials
    - ◇ Disconnect between policy and technical training
- Recommendations
  - Complete restructuring of IT Training Resources
    - ◇ Provides continuity of services
    - ◇ Provides consistency across technology training
    - ◇ Provides cross-training of documentation developers and trainers
    - ◇ Provides centralization of IT Training Administration



# Training

## As Is -

### Information Technology Applications

#### Engineering Applications

Bridge Maintenance Systems (BMS)  
Maintenance Mgt Systems (MMS)  
Pavement Mgt Systems (PMS)  
Computer Aided Draft & Design (CADD)  
Geographic Information Systems (GIS)  
HiCams

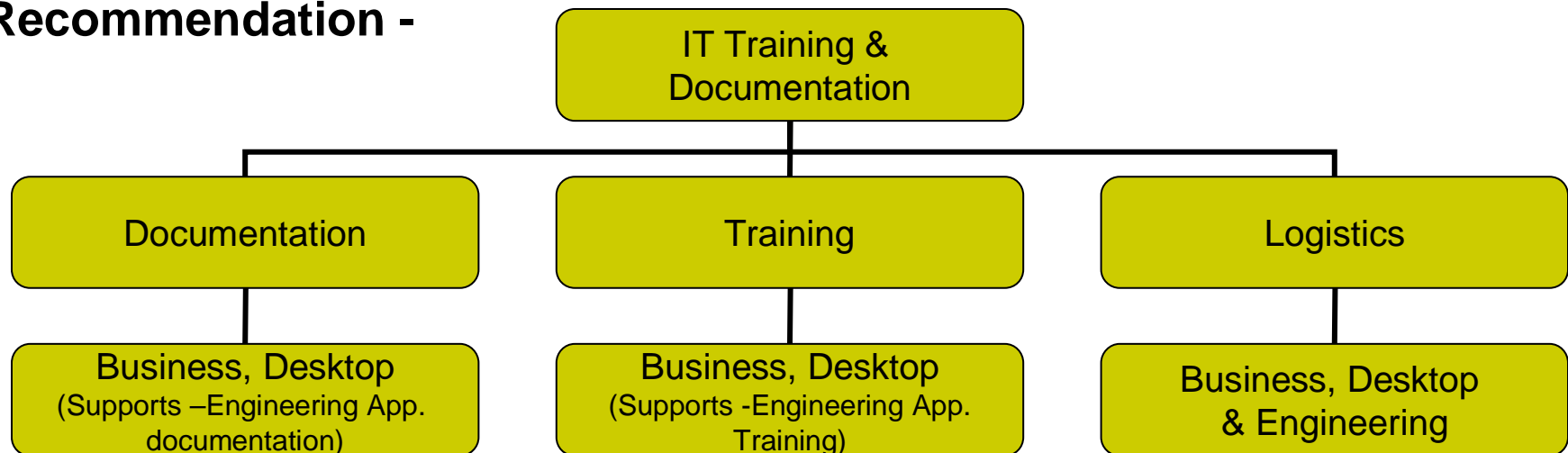
#### Business Applications

SAP (BSIP)  
STaRs (Formerly Pmii)  
PMTP (Pmii for IT)

#### Desktop Applications

Windows XP  
Microsoft Office:  
Word, PowerPoint, Access,  
Visio, Excel, Outlook, Publisher  
Adobe Acrobat 8  
HTML 4.0  
Introduction to Digital Images  
Netscape

## Recommendation -



# Desktop Support

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- Findings
  - Inadequate email/calendar system (including storage capacity)
  - Outdated standard operating & productivity software for desktop (MS Office)
  - Significant concern about local hardware support positions
  - Issue with long term maintenance of disparate hardware due to requirements of SB 991 (Dell, HP, etc.)
- Recommendations –
  - E-mail & Calendar
  - Productivity & Operating System Software
  - Computer Support Positions
  - Disparate hardware support recommendations

## Desktop Support – Recommendation Detail

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- **Email, Calendar. Productivity & Operating System:**
- Finalize and sign a **Memo of Understanding with STATE ITS** confirming their scheduled implementation of the new Email system
- Continue to work towards an **implementation** of the new Email / Calendar /OS/MS Office systems.
- Utilize **communication** plan to inform the Business Units of the status of the Email/Calendar/OS/MS Office upgrade on a monthly basis until completed
- Utilize **communication** plan to inform the Business Units of the **changes** associated with the upgrade (address change, storage limits, calendar conversion issues etc.).
- Make **training** available to all DOT users affected by the upgrade
- **Create** and make available **documentation** on how to use the new systems prior to the go-live.
- Identify a **position** that will be responsible for ensuring that our calendar, email, operating system, and productivity software & services are operationally sound and adequately maintained in the future.

## Desktop Support – Recommendation Detail

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- **Computer Support Positions**

- Require all support **issues** to be **reported** through the DOT Help Desk.
- Require all Support Technicians to **update and manage support tickets** using help desk technology.
- Use Division Support Techs for all field computer support.
- Require Support Technicians to **maintain current OS, upgrades & security patches** (standard image). This will minimize security breaches.
- **Report** Help Desk issues to local managers on a monthly basis.
- **Consolidate desktop support** positions within IT under 1 manager (including technician support ratios).
- Utilize **communication plan** to communicate and coordinate support issues to the business unit support technicians and unit/division heads.

## **Desktop Support – Recommendation Detail**

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- Hardware support recommendations
  - Continue to pursue an agreement with STATE ITS allowing NCDOT to utilize long term contracts with vendors to provide Desktop PCs, Laptop computers and printers.

- Findings
  - Network security policy doesn't limit the implementation of technology infrastructure
    - ◇ Wireless Networks
    - ◇ Virtual Private Network (VPN) access
  
- Recommendations
  - IT currently implementing Wireless Network Pilot in
    - ◇ Board Room
    - ◇ Chief Engineers Conference Room
      - \* Assessment for future deployment to follow the pilot
  - IT currently planning for a VPN pilot
    - ◇ 6 DOT employees testing the technology
      - \* Assessment for future deployment to follow the pilot

# Organization

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- Findings

- Personnel cost \$ 21.4 m
- Non-personnel cost \$ 34.6 m
- Contract Services cost \$ 46.3 m
- Total \$ 102.3 m (Per TMT Assessment documents)

- Supports

- Motor Vehicle Applications
- Engineering Applications
- Business Applications
- Web Applications
- 9,500 Desktop computers
- Network support statewide

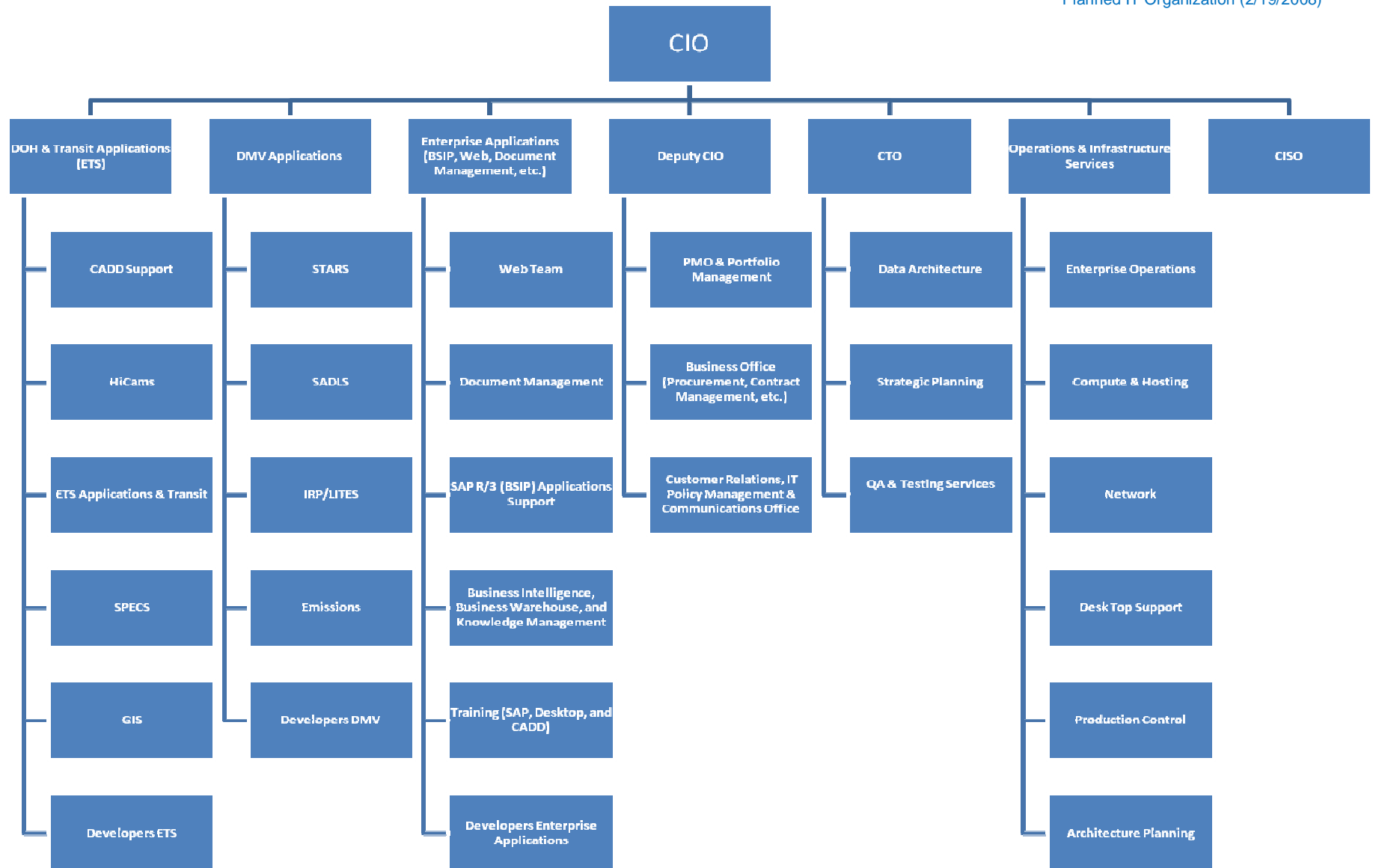
# Organization – Industry Averages

Gartner Category	Industry Average according to Gartner (Based on 9500 computers)	Actual Employees	Plus/Minus compared to Industry Standards	Notes
<b>Financial, Management, Admin</b>	<b>67</b>	<b>87</b>	<b>20</b>	
<i>Admin Team</i>		13		Admin and Finance
<i>IT Managers</i>		57		All IT Manager, Director and Executive classifications
<i>Project Management Office</i>		15		Project Managers, Testers, Specialists, Technicians
<i>CIO Support</i>		2		Special Project Specialists
<b>Applications</b>	<b>250</b>	<b>246</b>	<b>-4</b>	
<i>Application Development</i>		226		Programmers, Analysts, Project Managers
<i>Application Support</i>		20		Business Analysts, Basis, Ferry POS
<b>Help Desk</b>	<b>49</b>	<b>10</b>	<b>-39</b>	<b>1 manager and 9 contractors. 7 conversion positions have been created</b>
<b>Network</b>	<b>61</b>	<b>18</b>	<b>-43</b>	
<i>LAN Support</i>		9		Network Specialists and Technicians
<i>Security</i>		9		Security Analysts & Network Specialists
<b>Desktop</b>	<b>67</b>	<b>83</b>	<b>16</b>	
<i>Desk Top Support</i>		56		Includes all Support staff, some working within IT Units, 38 of these are dedicated to Tech Services support team .
<i>Warehouse</i>		6		
<i>Training</i>		13		PC and BSIP trainers
<i>CADD Support</i>		5		
<i>Plot Room</i>		3		Production support
<b>Data Center</b>	<b>116</b>	<b>27</b>	<b>-89</b>	<b>21 conversion positions have been created</b>
<b>Other Functions</b>		<b>40</b>		
<i>GIS Techs, RIIS, Mapping</i>		40		
<b>Total</b>	<b>610</b>	<b>511</b>	<b>-99</b>	
Computed using only number of computers, not total DOT employees and Gartner average of 6.43% IT to employee ratio		Per IT Staff Analysis		

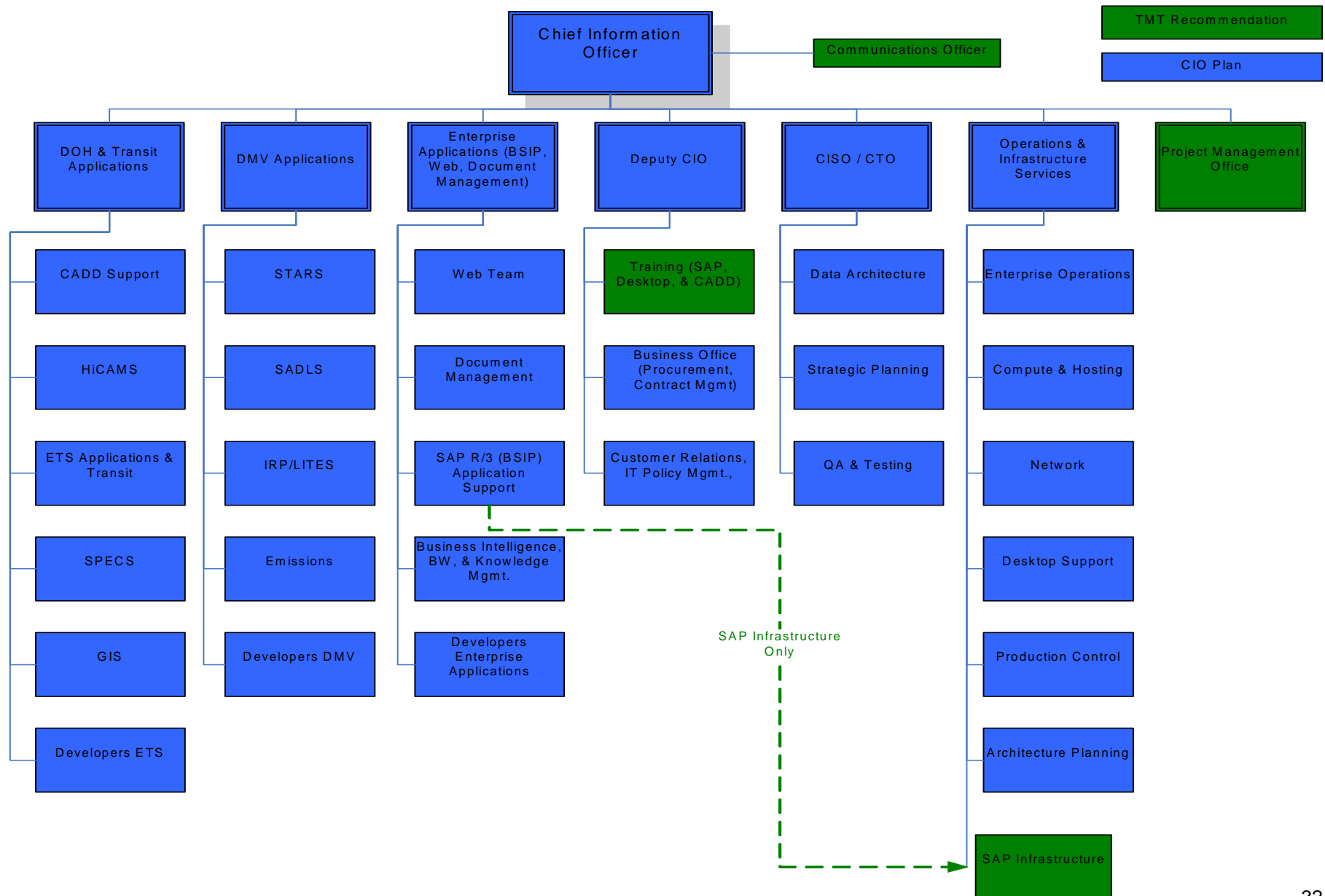


# Organization (IT Recommendations)

Planned IT Organization (2/19/2008)



# Organization



# IT Career Banding & Employee Development

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- Findings
  - IT career banding approved by OSP
  - Career Banding has been implemented in other agencies
  - Other agencies postings based on the full implementation of IT Career Banding.
  - NCDOT IT personnel banded in 2006 but the project was not fully funded.
  - Salary ranges of NCDOT IT employees fall below the threshold for full implementation
  - Secretary Tippet approved moving IT salaries to the range minimum (Nov 2007)
  - If salary revisions were processed, IT positions would be posted at the current OSP levels, eliminating discrepancy of salary ranges for a NCDOT IT position versus another agency's like position.
- Recommendations –
  - Implement approved salary adjustments to move NCDOT IT positions to current OSP levels

# Other Considerations

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- Other Considerations

- SB 991 Modifications

- ◇ Significant cost savings to the Department (and State of NC) through the elimination warehousing & support cost ( 20,000 sq. ft. warehouse storage, vehicles, full time and part-time personnel cost)

- Road Inventory & Mapping Sections

- Increase website usability by organizing a team to:

- ◇ Realign site layout with business needs
    - ◇ Redesign entire site based on content
    - ◇ Remove or reduce old and unused content
    - ◇ Simplify page templates to decrease navigation effort

## Other Considerations

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- Special Thanks
- Pending Actions / Approvals
  - Establishment of Governance Committee
  - Approval of Governance Committee staff person
  - Warehousing Transition Plan
  - Budget Allocation Revisions

*In Closing...*

